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TESTIMONY OF ROBERT THOMSON
Before the
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
Relative to
SANTA ANA RIVER WATER RIGHT APPLICATIONS FOR SUPPLEMENTAL
WATER SUPPLY

May 2007

TERRESTRIAL BIOLOGY

1 **Muni/Western Exhibit 8-1**

2 Testimony of Robert Thomson: Terrestrial Biology

3 **Summary**

- 4 1. I was retained by the San Bernardino Valley Municipal Water District (Muni) and the
5 Western Municipal Water District of Riverside County (Western) as part of the
6 environmental science and engineering team, to prepare the environmental impact report
7 (EIR) and to assist in the acquisition of permits for the Santa Ana River Water Right
8 Applications for Supplemental Water Supply (the “Project”).
- 9 2. The Project Draft and Final Environmental Impact reports (Muni/Western Exhibit 4-3 and 4-
10 4) delineate the direct, indirect and cumulative impacts of the Project on the existing natural
11 environment. The Final EIR also includes a cumulative impact analysis that extends outside
12 the area of influence of the Project. This additional cumulative analysis was provided to
13 facilitate the consideration of the Project and other water right applications within the Santa
14 Ana River watershed by the State Water Resources Control Board (SWRCB) staff.
- 15 3. The Draft and Final EIRs provide detail on the potential impacts to terrestrial biological
16 resources and feasible mitigation measures (see Draft EIR section 3.3, Draft EIR Appendix E,
17 Final EIR sections 2.2, 2.3.4, and 2.4). This testimony summarizes the terrestrial biological
18 resources that may be adversely affected by the Project, the impacts of the Project to those
19 resources and applicable mitigation measures to reduce or eliminate those impacts without
20 providing detailed citations to the Draft and Final EIRs. However, Muni/Western would be
21 pleased to provide these citations if the SWRCB deems it appropriate.
- 22 4. There would be significant adverse impacts to certain terrestrial biological resources from
23 construction of Project facilities (e.g., pipelines). Mitigation measures would reduce or
24 eliminate most of those impacts. Operations of the Project would also have significant
25 adverse impacts to certain terrestrial biological resources. The operational impacts are
26 somewhat limited as a result of the existing distribution and extent of potentially affected
27 biological resources (public trust assets) that could be affected by the Project.

28 **Background and Qualifications**

1 5. I am an ecologist with approximately 28 years of experience in preparing environmental
2 impact analyses, including the preparation of EIRs on large, controversial water resource
3 management and endangered species compliance efforts in the State of California. I have
4 prepared technical analyses and/or directed and managed the preparation of EIRs and
5 Environmental Impact Statements (EIS) evaluating the impacts of the Monterey Agreement,
6 Quantification Settlement Agreement, California State Water Project transfers, portions of the
7 Central Valley Project Contract Renewals, Restoration of the Salton Sea, and others.

8 6. I am currently a Technical Director and Senior Project Manager with ENTRIX
9 Environmental Consultants, Inc. My specific activities are related to the management of the
10 water and natural resource management group, focusing on water resource management
11 actions (e.g.; storage, conveyance, planning) and endangered species compliance for public
12 agencies and private-sector clients throughout the West. My resume is included with my
13 earlier testimony as Muni/Western Exhibit 4-2.

14 **Basis of the Testimony on Terrestrial Resources**

15 7. I was the overall manager for the preparation of the Santa Ana River Water Right
16 Applications for Supplemental Water Supply EIR. In this role I was responsible for and
17 directed technical evaluations for all portions of the EIR. For this testimony I have relied on
18 my observations and analysis and the observation and analysis of several experienced
19 biologists. These include Thomas W. Mulroy, PhD (SAIC), Rosemary A. Thompson, PhD
20 (SAIC), Marc Blain (BonTerra Corporation), G. Roy Leidy (EIP/PBS&J), Tamara Klug
21 (SAIC) and other biological analyses contained in the EIR.

22 **Introduction, Definitions and Foundational Summary**

23 8. The following testimony describes the existing conditions of the terrestrial biological
24 resources within the Santa Ana River watershed that could be adversely affected by the
25 Project, the impact of the Project on those resources and the mitigation measures that would
26 reduce or eliminate those impacts. Terrestrial biological resources are those species and
27 habitats that occupy or use lands and other resources outside of the stream channel aquatic
28 and riparian zones. More detailed descriptions of the resources, the impacts of the Project,
29 and the mitigation measures to be implemented are contained in the certified EIR
30 (Muni/Western Exhibits 4-3 and 4-4) and in the approved Mitigation Monitoring and
31 Reporting Plan (included in Muni/Western Exhibit 4-5).

1 **Terrestrial Biology Regional Overview**

2 9. The Project has the potential to adversely affect terrestrial biological resources within and
3 adjacent to construction areas and within and adjacent to portions of the mainstem of the
4 Santa Ana River that is potentially affected by operations (see Muni/Western Exhibit 8-2).
5 The location of the construction areas has been described in my previous testimony
6 describing the Project. Generally they are in the foothills of the San Bernardino Mountains
7 (on the upstream face of Seven Oaks Dam [in Segment A], in the lowest segment of the Santa
8 Ana Canyon [in Segment B]), and within the historic alluvial floodplain of the upper Santa
9 Ana River (Segments C and D). There are no construction impacts in other portions of the
10 Santa Ana River watershed (Segments E, F and G). Potential effects to terrestrial biological
11 resources from Project operations could occur upstream of Seven Oaks Dam in the foothills
12 of the San Bernardino Mountains, and adjacent to the Santa Ana River channel within the
13 historic alluvial floodplain of the upper Santa Ana River. There are no direct operational
14 impacts to terrestrial biological resources downstream of Segment D. Indirect impacts from
15 the conversion of vacant land providing habitat to developed uses supported by the additional
16 water supply would occur anywhere in the Muni/Western service area.

17 10. The biological impact analysis for the Project was based on information contained within
18 public documents, special studies and reports, maps, and consultations with local experts. In
19 addition, reconnaissance field surveys were conducted in 2001 and 2002 by a team of
20 botanical and wildlife specialists. Following the reconnaissance surveys, focused surveys for
21 vegetation and habitat mapping for endangered, threatened, and sensitive plant and wildlife
22 species were conducted in 2003 and 2004. The surveys were focused on Project areas that
23 would be affected by ground disturbance during construction. These areas include the area
24 near the plunge pool, the Plunge Pool Pipeline corridor from the plunge pool to Cone Camp
25 Road, the Santa Ana River corridor from Seven Oaks Dam to the Greenspot Bridge, the
26 Morton Canyon Connector II pipeline corridor, Devil Canyon By-Pass pipeline corridor, and
27 the Lytle Creek wash area in proximity to the Lytle Basins (Muni/Western Exhibits 8-3 and
28 8-4). Surveys conducted for this Project are discussed further in the context of the specific
29 resource. Additional surveys were performed along the length of the Santa Ana River in 2005
30 to document the current status and extent of biological and other public trust resources within
31 and adjacent to the river channel.

- 1 11. Upland (terrestrial) habitats potentially affected by the Project include bottom lands, bluffs,
2 levees, and high terraces that are transitional between riparian and sage scrub habitats. These
3 areas are dominated by scale broom and alluvial scrub. Invasive non-native species in and
4 adjacent to the river channel include salt-cedar and fountain grass; the latter species appears
5 to be spreading. Disturbed areas are also prevalent adjacent to the river and include roads,
6 agricultural areas, and parks. The disturbed areas support few native species and those present
7 do not rely on stream flows or other fluvial processes for survival. The density and
8 distribution of biological resources within the floodplain terraces have changed over the last
9 several decades, primarily due to a conversion of agricultural land uses to residential
10 development. Although remaining agricultural areas do not typically provide habitat for most
11 wildlife species, agricultural areas that are adjacent to undeveloped open spaces serve as
12 important transitional areas and may serve as migratory corridors for some wildlife species.
- 13 12. Reptilian diversity and abundance typically varies with habitat type and character. Some
14 species are associated with only one or two natural communities; however, most will forage
15 in a variety of communities. Reptilian species expected to occur in the Project area include
16 the western fence lizard, side-blotched lizard, coastal western whiptail, orange-throated
17 whiptail, northern red-diamond rattlesnake, California king snake, and gopher snake.
- 18 13. The scrub, woodland, and riparian habitats in the Santa Ana River corridor provide foraging
19 and cover habitat for song birds including year-round residents, seasonal residents, and
20 migrating individuals. In addition, portions of the Santa Ana River and its tributaries provide
21 a perennial water source for birds. The combination of these resources as well as the
22 availability of many community types provides for a high diversity of bird species.
23 Representative bird species observed during surveys include California towhee, Bewick's
24 wren, mourning dove, Anna's hummingbird, black phoebe, western kingbird, lazuli bunting,
25 American crow, and California thrasher.
- 26 14. Much of the habitat within the Project area provides optimal foraging opportunities and
27 several areas provide adequate breeding areas for raptors. Trees found in the riparian
28 woodlands provide perches for foraging over the scrub and grassland. Raptors expected to
29 occur in the Project area include, but are not limited to, Cooper's hawk, red-tailed hawk, red-
30 shouldered hawk, and American kestrel.

1 15. The diversity of habitats in the Project area is also expected to support a variety of mammals
2 such as coyote, desert cottontail, and mule deer. Other species with larger home ranges, such
3 as the bobcat and mountain lion, are resident within the region and may occasionally use the
4 Project area to forage or for cover. Small mammals such as the deer mouse, San Diego pocket
5 mouse, and dusky-footed woodrat are also expected to occur in the area.

6 16. Wildlife corridors link areas of suitable habitat that are separated by unsuitable habitat such
7 as rugged terrain, development, or changes in vegetation. Riverbeds often provide a favorable
8 passageway for wildlife movement to otherwise disconnected areas. Local wildlife movement
9 is expected to occur throughout the Project area along the Santa Ana River and its tributaries.
10 Historically, the Santa Ana River bed within the Project area was likely to have supported
11 substantial regional wildlife movement. In addition, the Santa Ana River floodplain may have
12 acted as a hub for wildlife movement with many major tributaries converging in a relatively
13 short section of the river. In recent years, however, loss of habitat due to development on the
14 floodplain and surrounding lowlands as well as construction of Seven Oaks Dam are likely to
15 have greatly reduced the amount of regional movement through the Project area. Although
16 less movement may be occurring, the Santa Ana River and associated floodplain are expected
17 to support some regional wildlife movement and migration. Due to the reduction in wildlife
18 corridors in the Project area, the remaining corridors between habitats have become
19 increasingly important.

20 **Local Biological Resources**

21 **Above Seven Oaks Dam – Segment A**

22 **Plants and Habitats**

23 17. The riverbed upstream of Seven Oaks Dam is occupied by relatively sparse riparian scrub
24 dominated by mule fat along dry secondary channels with riparian woodlands dominated by
25 white alder, sycamore, three species of willow, Fremont and black cottonwoods and velvet
26 ash in the vicinity of inflows from Alder and Warm Springs creeks and intermittently along
27 the active channels. Terraces in the floodplain are dominated by Riversidian sage scrub. This
28 segment is marked by periodic flooding, which dramatically alters the woody riparian
29 communities by stripping them from the banks of the stream, followed by episodes of
30 regeneration. (Please see Muni/Western Exhibits 8-5, 8-6, 8-7, 8-8, 8-9 and 8-10.) These
31 photographs taken in the spring of 2005 and March 2007 show the results of existing flood

1 control operations on terrestrial habitats upstream of Seven Oaks Dam. Muni/Western
2 Exhibit 8-5 shows the Warm Springs Cienaga prior to the inundation of the Seven Oaks
3 Reservoir that took place in Water Year 2005. Muni/Western Exhibit 8-6 shows the Warm
4 Springs Cienaga following the draining of the reservoir following the Water year 2005
5 inundation. In Muni/Western Exhibit 8-5 dense woody vegetation is clearly visible in the
6 foreground lying within the incised main channel. Less abundant vegetation extends
7 upstream. Also visible is the US Forest Service road leading upstream on the left bank (right-
8 hand side in the photograph) of the channel and providing access to upstream hydropower
9 facilities. Conditions reflect those following multiple years of well below average runoff.
10 Following the partial draining of water stored behind the dam in April 2005 the effects of
11 inundation on the riparian vegetation are visible (Muni/Western Exhibit 8-6). The extent of
12 sedimentation is evident and, although some of the woody riparian habitat is visible, the large
13 majority is covered by many feet of sediment. Areas of slope failure are visible especially on
14 the extreme right-hand side of the photograph. In March of 2005, storage behind the dam
15 reached almost 50,000 af as can be seen in Muni/Western Exhibit 8-7. The debris pool,
16 located below the staff gauges on the upstream dam face, is visible in the center foreground.
17 The engineered slope adjacent to Government Canyon is visible on the extreme left. The
18 access road leading upstream is visible on the extreme right-hand side of the photograph.
19 Muni/Western Exhibit 8-8 illustrates conditions following partial draining of the reservoir
20 pool in April 2005. The characteristic “bathtub ring” is clearly in evidence as well as
21 instances of slope failure. Muni/Western Exhibits 8-9 and 8-10, taken in March 2007,
22 demonstrate that the “bath-tub” ring is still currently present in the reservoir.

23 Listed Species

24 18. During the planning process for the Santa Ana River Mainstem Project (SARMP), the US
25 Army Corps of Engineers (USACE) requested formal consultation with the US Fish and
26 Wildlife Service (USFWS) as stipulated under Section 7 of the Endangered Species Act
27 (ESA) for federal endangered and/or threatened species. Based on analysis of field and
28 scientific data documented in the Biological Assessment for the SARMP, the USACE
29 concluded, and the USFWS concurred, that the SARMP was not likely to affect the peregrine
30 falcon, the bald eagle, or the slender-horned spineflower. Therefore, these species were not
31 given further consideration in the 1989 USFWS Biological Opinion (BO) (Muni/Western
32 Final EIR [Muni/Western Exhibit 4-4] at page 2-11). Furthermore, the BO concluded that the
33 SARMP, together with inclusion of the proposed mitigation/compensation plan included as

1 part of the project design for Seven Oaks Dam (and as detailed in the BO) would not likely
2 jeopardize the continued existence of the least Bell's vireo or the Santa Ana River woolly-
3 star. Subsequent to the 1988-1989 consultation, the San Bernardino kangaroo rat, arroyo
4 southwestern toad, California red-legged frog, coastal California gnatcatcher, and
5 southwestern willow flycatcher were Federally listed as threatened or endangered.
6 Consequently the USACE consulted with USFWS again and produced a Biological
7 Assessment (BA) in August 2000 (see Draft EIR, Muni/Western Exhibit 4-3 at page 3.3-31).
8 That BA found that operations of Seven Oaks Dam may affect and is likely to adversely
9 affect Santa Ana River woolly-star, slender-horned spineflower, and San Bernardino
10 kangaroo rat. In addition that BA found that operations of Seven Oaks Dam may affect but
11 was not likely to adversely affect least Bell's vireo, coastal California gnatcatcher, least
12 Bell's vireo critical habitat, southwestern willow flycatcher, and southwestern willow
13 flycatcher critical habitat.

14 19. No special status plants are known to occur in the area upstream of Seven Oaks Dam
15 potentially affected by the existing flood control operations. Biological surveys completed in
16 connection with the Seven Oaks Dam construction project for the Arroyo southwestern toad,
17 California red-legged frog, and the Santa Ana sucker were negative for the presence of these
18 species both above and below the Seven Oaks Dam.

19 20. The USFWS has published a final rule on October 19, 2005 designating critical habitat for
20 the southwestern willow flycatcher (see Final EIR, Muni/Western Exhibit 4-4 at page 2-80).
21 Included within the area designated as critical habitat are 25.3 miles of the upper Santa Ana
22 River, from its headwaters to the upstream face of Seven Oaks Dam. The final rule
23 designating critical habitat described this area as providing "riparian habitat for breeding,
24 migrating, dispersing, non-breeding and territorial southwestern willow flycatchers, meta-
25 population stability, gene flow, connectivity, population growth, and prevention against
26 catastrophic loss." (See Final EIR, Muni/Western Exhibit 4-4 at page 2-80).

27 Common Wildlife Species

28 21. Limited information on these biological resources was included in the Project EIR because
29 the Project would have no substantial effects on the resources using these lands and the lands
30 are only intermittently occupied (when not used for flood control purposes) and fully
31 mitigated by USACE actions.

1 **Santa Ana River Alluvial Fan (Seven Oaks Dam to “E” Street – Segments B, C and D)**

2 **Plants and Habitats**

3 22. The Riversidian alluvial fan sage scrub (RAFSS) is a unique and sensitive vegetation
4 community immediately below Seven Oaks Dam and on much of the vacant land downstream
5 in the alluvial fan area (shown in Muni/Western Exhibit 8-11). RAFSS is considered a
6 threatened natural community by the California Department of Fish and Game (CDFG). This
7 diverse scrub vegetation is regarded as sensitive because of its limited distribution and
8 because only remnant tracts remain. Most of this original habitat has been lost or severely
9 disturbed by urban, agricultural, and industrial development in this region. RAFSS is also
10 considered unique because it supports assemblages of sensitive plant species, some of which
11 occur only in the Santa Ana River alluvial fan.

12 23. RAFSS is common on floodplain terraces of the eastern portions of the Santa Ana River
13 alluvial fan. Individual plant locations and species dominance is patchy, reflecting the patchy
14 nature of the soils as well as the time since disturbance (e.g., by flooding, fire, and previous
15 ground disturbances). The RAFSS plant community is an assemblage of low drought-
16 deciduous shrubs that are openly spaced. This vegetation community is adapted to porous,
17 low-fertility substrates as well as periodic flooding and erosion.

18 24. The shrub covered terraces, which occur above the main channels, exhibit differences in
19 vegetative cover and composition that have been described as three phases of alluvial scrub
20 vegetation. These phases (pioneer [early], intermediate, and mature) are thought to
21 correspond to factors such as flood scour, distance from a flood channel, time since the
22 previous catastrophic flood, and substrate features such as texture and moisture content. Due
23 to similarities in the composition of dominant species observed in early and intermediate
24 phase RAFSS, it is difficult to distinguish these phases. However, the USACE differentiated
25 between various phases of RAFSS habitats by the elevation at which the habitats occur when
26 the species composition was similar in their compliance documentation for the Seven Oaks
27 Dam.

28 25. Early phase RAFSS exhibits sparse cover and low species diversity, and plants are typically
29 low in stature. This phase develops within infrequently flooded stream channels in the
30 intervals between periodic flood events and will develop and occupy a site within the first
31 decade or so after a major flood. Terraces with early RAFSS were thought to have dated to

1 flooding that occurred in 1993, and are associated with overbank areas adjacent to the Santa
2 Ana River or the confluence with City Creek and Plunge Creek. Intermediate phase RAFSS
3 exhibits denser shrub cover and may have higher species diversity than early phase RAFSS.
4 Terraces with intermediate RAFSS were thought to have dated to flooding that occurred in
5 1938 and 1969. Mature phase RAFSS includes a higher percentage of woody shrub species
6 than intermediate RAFSS and were last flooded during the 1860s or earlier. Developing
7 information indicates that some mature habitat areas, although they are located on alluvial fan
8 surfaces originally created by flooding, have not flooded in hundreds to thousands of years.

9 Listed Species

10 26. The following identifies and provides a general description of the characteristics of key
11 sensitive terrestrial species found in the alluvial fan area of the Santa Ana River. This
12 discussion is summarized from Muni/Western Exhibit 4-3 and Exhibit 4-4.

13 27. Santa Ana River woolly-star is a perennial herb or sub-shrub reaching a height of 3 feet,
14 found only in the Santa Ana River drainage. This species occurs only in the floodplain of the
15 Santa Ana River where it is most commonly associated with sandy soils and early
16 successional and intermediate phases of RAFSS habitat, although populations also occur
17 among mature RAFSS. It is found primarily on newer surfaces of coarse, loose sand deposits
18 where competing perennial and annual plant cover is relatively low. This shrub is also found
19 to a lesser extent in intermediate to mature aged RAFSS habitats. In these more mature
20 habitats it is often found where animals have moved sand to the surfaces or where minor
21 stream channels have deposited sand locally within the more mature RAFSS community.

22 28. Slender-horned spineflower is a spreading annual herb approximately 1 to 4 inches tall with
23 sprays of tiny white to pink flowers. Within the Santa Ana River fan, the slender-horned
24 spineflower is found on alluvial benches vegetated with intermediate to mature phase
25 RAFSS, typically with California juniper. The habitats where the plant is found are
26 infrequently flooded and have not been recently flooded. The preferred soil is medium- to
27 coarse-grained sand with some cohesion and is sometimes described as silty. The
28 microhabitat where the plants are found may contain other annual plants but generally have
29 limited cover of introduced annual grasses. It is not known what mechanism prevents
30 aggressive non-native annual grasses or other species from pre-empting these areas to the
31 exclusion of the spineflower. It is thought that cryptogamic soil crusts coupled with limited

1 soil fertility play a role in inhibiting grasses that would otherwise displace the diminutive
2 spineflower.

3 29. RAFSS does represent suitable habitat for the Coastal California gnatcatcher, although this
4 species is mainly associated with coastal sage scrub. USFWS has designated much of the
5 Santa Ana River fan as critical habitat for this species. Although suitable habitat occurs on
6 the Santa Ana River alluvial fan and throughout the region, gnatcatcher observations are rare
7 in this area, which is at the northeastern extent of its range. There are several recorded
8 sightings of California gnatcatcher within the Santa Ana River alluvial fan; however, none of
9 the observations have indicated breeding individuals. Focused surveys conducted within
10 those portions of the Santa Ana River alluvial fan associated with Project construction
11 activities resulted in no observations of this species.

12 30. The southwestern willow flycatcher is a small migratory songbird that breeds in riparian
13 habitat in the southwest U.S. during spring and summer. At the end of the breeding season, it
14 returns to Mexico, Central America, or possibly northern South America where it remains for
15 the rest of the year. Once common within the major drainages of southern California it has
16 become increasingly rare in recent years. It has been reported within the Santa Ana River
17 corridor at several different locations, chiefly in the lower portions of the watershed area
18 between the San Timoteo Creek confluence and Prado Dam. Past surveys have recorded from
19 seven to nine breeding pairs within this segment of the Santa Ana River and the Prado Flood
20 Control Basin. One additional pair of southwestern willow flycatchers was recently observed
21 in the Project area in Morton Canyon. Focused surveys conducted in 2003 within a small
22 portion of the Santa Ana River corridor just below Seven Oaks Dam resulted in no
23 observations of this species at that location.

24 31. The western yellow-billed cuckoo is a medium-sized songbird that inhabits riparian
25 woodlands. Historically, it was widespread in California and common in some riparian areas.
26 A survey conducted in 1986 and 1987 estimated that only three locations supported more
27 than five breeding pairs on a regular basis. Although these populations are not within the
28 watershed that would be directly affected by the Project, several pairs of cuckoos have been
29 detected downstream in the riparian woodlands of Prado Flood Control Basin.

30 32. The San Bernardino kangaroo rat (SBKR) is found on the Santa Ana River alluvial fan and in
31 a few other locations in the eastern Los Angeles Basin. Soil type and vegetation appear to be

1 the most important factors in determining habitat suitability. This subspecies is found
2 primarily on sandy loam substrates, characteristic of alluvial fans and flood plains, where
3 they are able to dig simple, shallow burrows. The preferred vegetation type is also associated
4 with alluvial fans, where the common elements are open habitat characterized by low shrub
5 canopy cover which does not interfere with SBKR hopping movement. Although the SBKR
6 occasionally occupies sage scrub just outside an alluvial fan, alluvial scrub supports the
7 highest population densities.

8 33. Stephen's kangaroo rat is a rodent that generally occupies non-native grasslands dominated
9 by annuals adjacent to sage scrub communities or open disturbed grasslands with scattered
10 shrubs. It occurs in southwestern San Bernardino County, most of western Riverside County,
11 and small portions of northern Diego County. Although most of the lower portion of the
12 watershed that potentially could be indirectly affected by the Project is within the range of the
13 Stephen's kangaroo rat, suitable habitat does not occur within the river corridor.

14 Common Wildlife Species

15 34. The vegetation communities discussed above provide wildlife habitat within the Santa Ana
16 River alluvial fan. While a variety of animal types are well adapted to the conditions of the
17 fan, wildlife diversity, in general, is low due to the relatively homogenous structure of the
18 shrubby vegetation occurring throughout the fan. However, many wildlife species occurring
19 within adjoining vegetative communities may occasionally traverse or use the periphery of
20 the fan, making it part of a functional ecosystem for a variety of wildlife species.

21 35. The understanding of the abundance and density of invertebrates in the fan communities is
22 limited. However, the amount of undisturbed native habitat on the fan is considered sufficient
23 to support populations of many invertebrate species, including arachnids and a variety of
24 insect orders.

25 36. Amphibian populations are uncommon in the fan due to the infrequency of pooled or ponded
26 water, and the lack of riparian habitat on the fan. However, areas closest to the Santa Ana
27 River occasionally support amphibians in wet years. Additionally, some toad species often
28 move into drier upland habitat during dry months. Groundwater recharge basins and other
29 isolated wet areas that are a result of man's activities or facilities may occasionally support
30 amphibians. Common amphibian species that are expected to occur on the fan include, but

1 are not limited to, western toad, western spadefoot toad, and Pacific and California chorus
2 frogs in isolated wet spots.

3 37. Habitat characteristics such as sparse vegetation, small mammal burrows, abundant prey, and
4 various sized boulders provide high quality habitat for many reptile species. Reptile species
5 representative of the fan that are expected to occur include the western fence lizard, side-
6 blotched lizard, coastal western whiptail, northern red-diamond rattlesnake, red coachwhip,
7 and chaparral whipsnake.

8 38. Although less diverse than woodland habitats, scrub communities such as RAFSS support a
9 large number of bird species. The sage scrub of the Santa Ana River alluvial fan provides
10 foraging habitat and cover for year-round residents, seasonal residents, and migrating
11 songbirds. In addition, the scrub of the Santa Ana River fan covers a large area locally, and is
12 relatively undisturbed. Bird species representative of RAFSS habitat are the same as
13 described above for the Santa Ana River corridor.

14 39. Much of the habitat within the Project vicinity provides good foraging opportunities and
15 provides adequate breeding areas for raptors. Trees found in nearby riparian woodlands and
16 ornamental (eucalyptus) woodlands provide perches for foraging over the scrub vegetation.
17 RAFSS habitat is also excellent habitat for small mammals and likely supports a large rodent
18 population. Collectively, the abundance of prey and the availability of perches and nest sites
19 suggest that the fan is being used by a variety of raptor species. Typical raptor species that
20 could occur include the golden eagle, Cooper's hawk, red-tailed hawk, red-shouldered hawk,
21 American kestrel, turkey vulture, and the great-horned owl.

22 40. Sage scrub habitat with an alluvial substrate supports a large variety of mammals of all sizes,
23 provided the area is large and contiguous with other community types. The Santa Ana River
24 alluvial fan habitats support many common small mammal species such as the deer mouse,
25 San Diego pocket mouse, and the dusky-footed woodrat. Medium sized mammals occupy the
26 fan including the coyote, striped skunk, and desert cottontail. Other species with larger home
27 ranges, such as mule deer, bobcat, and mountain lion, are resident within the region and are
28 likely to occasionally forage on the fan.

29 41. Wildlife movement occurs within the Santa Ana River alluvial fan including the Project area
30 via wildlife paths and trails throughout the habitat. As a result of urbanization of the San

1 Bernardino valley large wildlife movement on regional scale is focused on the major
2 drainages in the alluvial fan area.

3 **Santa Ana River Corridor (“E” Street to Prado Reservoir - Segments E, F and G)**

4 42. The Project does not include construction of facilities in this region and would not have the
5 potential to directly affect terrestrial biological resources in this area. Operations of the
6 Project would only influence biological resources within the existing levees of the Santa Ana
7 River. Indirect effects of the Project (principally the support of future urbanization of the
8 region) could adversely affect natural habitats adjacent to these Santa Ana River segments.

9 **Impact Thresholds**

10 43. The criteria used to determine the significance of impacts associated with the Project are
11 guided by the State CEQA Guidelines Appendix G. From this significance criterion guidance
12 Project-specific impact thresholds were developed to be measurable yet conservative and
13 protective of the particular environmental resources, so that impacts that were found to be
14 less than the threshold would be unlikely to be significant. Project-specific significance
15 thresholds for terrestrial biological resources were developed for:

- 16 • Habitat removal and long-term disturbance of RAFSS – further delineated by habitat
17 quality;
- 18 • Indirect impacts to RAFSS construction;
- 19 • Direct loss of Parry’s spineflower habitat or individuals;
- 20 • Indirect impacts to Parry’s spineflower;
- 21 • Removal or desiccation of riparian habitat;
- 22 • Reduction or elimination of flood-generated habitat renewal to Santa Ana River woolly-
23 star;
- 24 • Direct mortality, permanent removal of habitat, disturbance of potentially suitable
25 habitat, or reduction or elimination of flood-generated habitat renewal processes relating
26 to SBKR;
- 27 • Indirect impacts to SBKR; and
- 28 • Direct mortality or permanent removal of occupied habitat for California gnatcatcher.

1 **Impacts of the Project**

2 44. Two main types of direct Project impacts are anticipated for biological resources and are
3 associated with: (1) ground disturbance during pipeline construction activities, and (2)
4 reduction in flows in the main channel of the Santa Ana River due to Project operations.
5 Indirect impacts to biological resources would result from the Project's contribution to the
6 removal of an obstacle to urban development within the Muni and Western service areas.

7 **Construction**

8 45. Project related construction would install new water management, diversion and conveyance
9 facilities in four general locations – on and immediately adjacent to the upstream face of
10 Seven Oaks Dam, downstream of Seven Oaks Dam near the mouth of the Santa Ana River
11 canyon, downstream of the California State Water Project facilities at Devil Canyon and
12 south of Lytle Creek. No adverse impacts to biological resources are anticipated upstream of
13 Seven Oaks Dam (Segment A) because all construction activities (as summarized in prior
14 testimony and further described in the Draft EIR, Chapter 2 and Appendix C) on the upstream
15 side of Seven Oaks Dam would take place in areas that are already heavily disturbed (see
16 Muni/Western Exhibits 8-9 and 8-10). Further, no construction-related adverse impacts to
17 terrestrial biological resources were identified below the Santa Ana River alluvial fan region
18 because no Project-related construction would occur outside of this area.

19 46. Project-related construction activities, and general ground disturbance from construction
20 trucks and equipment may disturb the vegetation and wildlife species in the construction
21 areas. The temporary effects of construction activities, such as increases in noise, vibration,
22 and dust from grading and construction equipment, could also affect the biological resources
23 in the vicinity of construction. Impacts could include: the loss of native vegetation;
24 temporary effects on common wildlife species in the area; and disturbance and removal of
25 riparian, wetland and stream habitat. Construction may result in mortality of common
26 riparian and upland wildlife species. Some of the sensitive species that could be affected
27 include RAFSS, Slender-horned spineflower, Parry's spineflower, Santa Ana River woolly-
28 star, and the San Bernardino kangaroo rat. The impacts of construction by specific facility
29 and habitat type are listed in Muni/Western Exhibit 8-14. Mitigation measures that will be
30 implemented to reduce these impacts are summarized later in my testimony.

31 **Operations**

1 Above Seven Oaks Dam – Segment A

2 47. The Project would subject a small portion of the upper Santa Ana River immediately
3 upstream of Seven Oaks Dam (approximately 1.3 miles) to periodic inundation as part of
4 water conservation operations. Seasonal storage of up to 50,000 afy would impound water up
5 to 2,418 feet NGVD. Biological impacts addressed in the USACE 1988 FSEIS include effects
6 on vegetation and wildlife in the upper Santa Ana Canyon up to the 50-year flood line. (See
7 Muni/Western Exhibit 4-3, Draft EIR at Section 3.3). The 50-year flood line is at a surface
8 elevation of approximately 2,425 feet above sea level. Therefore, all biological impacts at
9 2,418-foot water levels and below were previously addressed and mitigated as part of the
10 USACE SARMP.

11 Plants and Habitats

12 48. Habitats for biological resources were anticipated to be, and are currently being, regularly
13 disturbed by existing flood control operations during the winter storm season and inundation
14 from these floodwaters into the spring and summer seasons. Existing operation of Seven
15 Oaks Dam and Reservoir for flood control and proposed operations for seasonal water
16 conservation would result in the loss of alluvial scrub, alder woodland and chaparral habitat
17 upstream of Seven Oaks Dam. This loss of habitat is shown in Muni/Western Exhibits 8-8
18 and 8-9. Increased frequency and duration of inundation, up to elevation 2,418 ft above mean
19 sea level (msl) during the Project-related seasonal storage period, would result in impacts to
20 public trust resources that are similar to existing flood control operations. Project-related
21 impacts to these resources are less than significant since flood control operations would have
22 previously produced the adverse effects from inundation of these plants and habitats. The
23 Project-related additional period of duration would not significantly increase the amount or
24 extent of the impacts to these plants or habitats. Biological resources within the flood control
25 reservoir pool (below elevation 2,425 ft msl) are part of the existing environment and their
26 loss during flood control operations was mitigated by the USACE prior to the construction of
27 Seven Oaks Dam.

28 49. No additional Project-related impacts to wildlife movement corridors are anticipated because
29 impacts on terrestrial habitats upstream of Seven Oaks Dam was identified and fully
30 mitigated by the USACE as part of the construction of the Seven Oaks Dam project.

31 Listed Species

1 50. The seasonal storage of water behind Seven Oaks Dam is not likely to remove or appreciably
2 degrade the primary constituent elements of habitat for the southwestern willow flycatcher.
3 The fluctuation in water levels in Seven Oaks Reservoir due either to flood control operations
4 or seasonal storage operations is likely to lead to the exposure of fine/moist soils in the
5 floodplain of the reservoir, which results in the development of riparian tress and other
6 riparian vegetation of the type utilized by the flycatcher. It is unlikely that this vegetation
7 would be sufficiently persistent or of sufficient patch size to be frequently used by the
8 flycatcher. This is shown by a comparison of the extent of riparian forest at the confluence of
9 the Santa Ana River and Warm Springs Creek prior to inundation in 2004 (Muni/Western
10 Exhibits 8-5), following inundation in the spring of 2005 (Muni/Western Exhibits 8-6) and its
11 regeneration in 2007 (Muni/Western Exhibit 8-10). Riparian vegetation of the type used by
12 the flycatcher may persist on the perimeter of the inundation area and will increase and
13 decrease in response to flood control operations. Riparian vegetation, including willows, may
14 be submerged for substantial periods of time during the rainy season when they are leafless
15 and yet remain viable, thereby providing some of the habitat components necessary for the
16 flycatcher (see Muni/Western Exhibit 8-10). In this way, neither the temporary inundation of
17 riparian habitat nor the temporary drying out of such habitat due to reservoir operations
18 would be likely to affect the ability of the southwestern willow flycatcher to utilize the
19 critical habitat immediately upstream of Seven Oaks Dam. Consequently, seasonal water
20 conservation operations would not be expected to have an adverse effect on critical habitat
21 for the southwestern willow flycatcher. No additional impacts to sensitive wildlife species or
22 habitats are anticipated from implementation of the Project because any known species and
23 habitats were identified and fully mitigated as part of the construction of the Seven Oaks Dam
24 project. Other wildlife species considered sensitive or listed following completion of the 1988
25 FSEIS fall under the jurisdiction of the SARMP and its environmental compliance processes.
26 (See Muni/Western Exhibit 4-3, Draft EIR Section 3.3).

27 Common Wildlife Species

28 51. The seasonal storage of water behind Seven Oaks Dam is not likely to remove or appreciably
29 degrade habitats used by other wildlife using the resources upstream from Seven Oaks Dam.
30 The fluctuation in water levels in Seven Oaks Reservoir due to flood control operations has
31 and will continue to adversely affect hillside chaparral habitats and other valley bottom
32 habitats (including small isolated grassy and riparian habitats) within the inundation zone. As
33 shown in Muni/Western Exhibit 8-9, a small grassy area is developing on the recently

1 deposited sediments immediately upstream of the current debris pool. The seasonal storage
2 operations of the Project would not result in further degradation of these habitats. Riparian
3 vegetation, including willows, may be submerged for substantial periods of time and yet
4 remain viable, thereby providing some of the habitat components necessary for the wildlife.
5 Consequently, seasonal water conservation operations would not be expected to have an
6 adverse effect on terrestrial wildlife habitat upstream of Seven Oaks Dam.

7 **Seven Oaks Dam to Cuttle Weir – Segment B**

8 52. The Project would construct water diversion facilities (either at the plunge pool or at Cuttle
9 Weir) immediately downstream of Seven Oaks Dam and conveyance facilities to allow the
10 efficient management of a new, high quality, local water supply. The Project would divert up
11 to 1,500 cfs from the mainstem of the Santa Ana River and convey that water to users within
12 the Muni and Western existing service areas. Since few terrestrial biological resources
13 occupy or utilize this Santa Ana River segment the reduction in flow (particularly in non-
14 storm days) would not significantly impact terrestrial biological resources in this Santa Ana
15 River segment. Muni/Western Exhibits 8-12 and 8-13 show the biological resources at the
16 upper end of this less than 0.5 mile reach of the Santa Ana River.

17 **Santa Ana River Alluvial Fan (Cuttle Weir to “E” Street – Segments C and D)**

18 53. Operation of the Project would reduce non-storm day flows within the Santa Ana River,
19 potentially affecting aquatic, wetland and riparian species, but this would not adversely affect
20 terrestrial biological resources that use the Santa Ana River. The diversion of up to 1,500 cfs
21 would change flood flow frequency and, thereby, reduce the frequency of over-bank flood
22 events (throughout Segment C and near River Mile 65 in Segment D) and would lead to
23 increase maturation of RAFSS habitat that would otherwise be subjected to the disturbance of
24 floods (see Muni/Western Exhibit 8-15, which shows potential overbank flow areas). A 30-
25 year increase in recurrence interval of the 50-year flood was conservatively chosen as the
26 threshold for measuring significant impacts to woolly-star and SBKR from changes in storm
27 flows and flood generated habitat. This increase in RAFSS maturation would produce habitat
28 that is less suitable for the SBKR and Santa River woolly-star.

- 29 • The results of detailed flood water elevation modeling predict that the Project would
30 affect approximately 10 acres of the alluvial floodplain in Segment C. This is a
31 significant but mitigable impact to a small population of Santa Ana River woolly-star.

1 Identified mitigation measures include the removal of invasive non-native plant
2 species that diminish the value of SBKR and Santa Ana River woolly-star habitats
3 and development of a program of habitat manipulation that simulates the aftermath of
4 natural flooding.

- 5 • The Project-related change in flood frequency in Segment D (an increase in the
6 repeat of the 50 year flood to a 56-year interval) would not be an important change.

7 **Santa Ana River Corridor (“E” Street to Prado Reservoir - Segments E, F and G)**

8 54. Operations of the Project would only influence biological resources within the existing levees
9 of the Santa Ana River. Therefore, the Project would not have the potential to directly affect
10 terrestrial biological resources within this reach of the watershed. Indirect effects of the
11 Project (principally the support of future urbanization of the region) could adversely affect
12 natural habitats adjacent to these Santa Ana River segments in the Muni/Western service
13 areas.

14 **Indirect Impacts within the Muni and Western Service Areas**

15 55. The Project would accommodate a portion of projected urban development and growth,
16 thereby indirectly impacting biological resources. Impacts to threatened and endangered
17 species and other sensitive biological resources generally would be adverse due to the
18 conversion and degradation of habitat.

19 56. Potentially significant indirect impacts to biological resources include: direct mortality to
20 common, listed, proposed, or candidate species; loss of habitat occupied by such species
21 and/or loss of sensitive habitats; impacts to isolated wetlands and habitat fragmentation which
22 could restrict wildlife movement. These impacts would be significant and unavoidable.
23 Significant but mitigable impacts include the loss of oak trees or alteration of natural
24 processes (e.g., hydrology), resulting in indirect loss of habitat. The Project would
25 accommodate a portion of the projected growth and, therefore, would contribute to these
26 significant impacts.

27 **Mitigation Measures**

28 57. Disturbance by construction activities to native habitats and to sensitive species will be
29 lessened by: restricting construction activities to previously disturbed areas, where practical;

1 identifying and avoiding biologically sensitive areas prior to construction activities; training
2 employees to become familiar with affected species, habitats, and any permit conditions; and
3 biological monitoring and relocation of species (both common and sensitive) in the
4 construction areas prior to construction.

5 58. Impacts on biological resources associated with changes in surface flow in the Santa Ana
6 River will be minimized by: monitoring and removing invasive non-native plant species that
7 diminish the value of the affected species; and by implementing a program prepared in
8 cooperation with federal and state resource agencies, to restore/renew habitat. These
9 measures may be modified and additional measures may be identified as part of compliance
10 with federal and state Endangered Species Act requirements. See Section 3.3 (Biological
11 Resources) and Appendix E (Biological Resources) of the Draft EIR (Muni/Western Exhibit
12 4-3).

13 59. A portion of the indirect impacts to biological resources would be reduced should local
14 governments implement the policies of the General Plans of the cities and counties within the
15 watershed. However, all impacts may not be reduced to less than significant. Specific
16 mechanisms for implementing these policies would be determined in the course of project-
17 specific environmental review, as required under California Environmental Quality Act
18 (CEQA). Implementing these plans and policies would also reduce adverse but less than
19 significant Project impacts. Other regulatory agencies such as the USACE, USFWS, and
20 CDFG also may impose permit conditions designed to reduce significant impacts of projects.
21 Future land development may be subject to other environmental regulations, such as Section
22 404 of the Clean Water Act, Section 10 of the ESA, and Section 1600 of the Fish and Game
23 Code, and specific mitigation measures may be developed through the permitting process that
24 reduce impacts to biological resources.

25 **Conclusions**

26 60. Impact conclusions by location and impact type are summarized in Muni/Western Exhibit 8-
27 16.

28 61. Impacts to terrestrial species would principally occur as a result of construction of new
29 project facilities. Siting of the new facilities has considered terrestrial habitats and species
30 and avoided impacts to sensitive terrestrial species. The application of adopted mitigation

1 measures would further reduce or eliminate impacts to terrestrial species. Impacts would be
2 less than significant.

3 62. Impacts to terrestrial species from operations of the Project would be less than significant.
4 The increased duration of inundation would not further degrade the chaparral habitat on the
5 banks of Seven Oaks Reservoir not would it exacerbate impacts to wetland and riparian
6 habitats in the valley bottom lands. The small reduction in the frequency of overbank flow
7 downstream of the confluence of Mill Creek would not significantly alter the maturation of
8 RAFSS and its components (principally Santa Ana River woolly-star).

9 63. Indirect and cumulative impacts would be significant to some sensitive species. However,
10 existing planning policies and permit requirements on anticipated urban development of
11 existing undeveloped lands would reduce or eliminate impacts to terrestrial species in the
12 Muni and Western services and would result in less than significant impacts to common
13 terrestrial species and habitats.